

Technical Data Sheet (TDS)

- Food Grade L-Aspartic Acid (56-84-8)

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1. Product Overview

- **Product Name:** L-Aspartic Acid (Food Grade)
- **CAS Number:** 56-84-8
- **Molecular Formula:** C₄H₇ NO₄ | **Molecular Weight:** 133.10 g/mol
- **Chemical Classification:** Non-essential amino acid, food grade nutrient fortifier, flavor modifier & acidulant
- **Core Characteristics:** High purity (≥98.5%), white crystalline powder, slightly hygroscopic, water-soluble, stable under normal food processing conditions. As a natural amino acid, it complies with GB, EU, FDA and CAC food safety standards, non-toxic at recommended dosages. Participates in human energy metabolism and protein synthesis; has the functions of nutritional fortification, mild acid regulation and flavor modification, suitable for various food processing industries.

2. Technical Specifications (Food Grade, Compliant with GB 1886.237-2016 & CAC)

Item	Standard Requirement	Test Method
Appearance	White crystalline powder, free-flowing, odorless	Visual & Olfactory Inspection
Assay (L-Aspartic Acid)	≥98.5%	High Performance Liquid Chromatography (HPLC)
Specific Rotation [α] ₂₀ ^D	+24.0° ~ +26.0° (5 mol/L HCl)	Polarimetry
Moisture Content	≤0.5%	Karl Fischer Titration
pH Value (1% aqueous, 25°C)	2.5~3.0	Digital pH Meter
Residue on Ignition	≤0.1%	Gravimetric Method (600±50°C)
Chloride (as Cl ⁻)	≤0.02%	Volumetric Method (AgNO ₃)
Sulfate (as SO ₄ ²⁻)	≤0.02%	Turbidimetric Method
Heavy Metals (as Pb)	≤5 ppm	Atomic Absorption Spectrometry (AAS)
Arsenic (As)	≤1 ppm	Atomic Fluorescence Spectrometry (AFS)
Cadmium (Cd)	≤0.1 ppm	AAS
Mercury (Hg)	≤0.01 ppm	Cold Vapor Atomic Absorption
Total Bacterial Count	≤100 CFU/g	Plate Count Method
E. coli	Negative	Food Microbial Detection Method
Salmonella	Negative in 25g	Food Microbial Detection Method
Bulk Density	0.78-0.92 g/cm ³	Volumetric Method
Water Solubility	≥4.8 g/100 mL (25°C)	Visual/Volumetric Method

3. Product Advantages (Food Grade Focus)

1. **Multi-Functional Application:** Integrates **nutritional fortification, mild acid regulation and flavor modification**; one product for multiple uses, improves food nutritional value and taste simultaneously, reduces the use of other food additives.
2. **High Food Safety:** ≥98.5% high purity, no harmful impurities, complies with international food safety standards; non-essential amino acid for humans, no toxic side effects at recommended dosages, suitable for all food categories including infant and sports nutrition food.
3. **Mild Acidulant:** Provides mild sour taste, no harsh acidic aftertaste, can replace part of inorganic acidulants (citric acid, malic acid), and has a buffering effect on food pH, improving food taste stability.

4. Application & Dosage Guide (Food Formulation, Compliant with GB 2760)

4.1 Target Food & Core Benefits

- **Beverages (fruit juice, functional drink, sports drink, soy milk):** Mild acidulant, flavor modifier and nutrient fortifier; improves beverage sour taste layering, supplements amino acids, no impact on beverage clarity and stability.
- **Dairy Products (milk, yogurt, cheese, milk powder):** Nutrient fortifier and fermentation nutrient; promotes lactic acid bacteria fermentation, improves dairy protein quality, no impact on dairy flavor and texture.
- **Nutritional/Sports Food (amino acid powder, protein powder, meal replacement, energy bar):** Amino acid fortifier; participates in human energy metabolism, supplements exercise consumption, suitable for sports and malnourished populations.

4.2 Recommended Addition Levels (w/w, based on food raw materials)

Food Category	Recommended Dosage	Core Effect
Beverages	0.05~0.3%	Acid regulation/flavor modification/nutrition
Dairy Products	0.02~0.15%	Fermentation promotion/nutrient fortification
Nutritional/Sports Food	1.0~6.0%	Amino acid fortifier/energy supplement
Condiments	0.1~0.5%	Acid regulation/flavor enhancement
Bakery	0.01~0.08%	Nutrient fortifier/dough improvement
Infant Food	0.05~0.2%	Amino acid supplement/growth nutrition
Synthesis Raw Material	80~100%	Aspartame/aspartate synthesis

5. Handling & Formulation Guidelines

1. **Premixing is Recommended:** Premix with food-grade inert carrier (sucrose, maltodextrin, corn starch) at a ratio of 1:10 to 1:20 to create a premix; ensures uniform distribution in food raw materials and prevents hygroscopic caking.
2. **Dry Handling First:** The product is slightly hygroscopic and acidic; use dry food-grade equipment/tools for weighing/mixing. Avoid contact with water and air for a long time during processing to prevent caking and moisture absorption.

6. Packaging, Storage & Shelf Life

- **Small Packaging:** 1 kg/5 kg food-grade moisture-proof aluminum foil bags (for small food factories, laboratory use)
- **Standard Packaging:** 25 kg food-grade moisture-proof HDPE drums with inner PE liners (industrial use, anti-hygroscopic)
- **Bulk Packaging:** 500 kg/1000 kg food-grade jumbo bags with inner PE liners (for large food factories, closed loading/unloading)

7. Quality Assurance & Control

1. **Production Standards:** Produced in a GMP-compliant food-grade production workshop; comply with ISO 9001 (Quality Management) and ISO 22000 (Food Safety Management) system standards. Adopt closed fermentation/crystallization/drying process to ensure high purity, hygiene and no contamination, meeting food-grade production requirements.
2. **Batch Testing:** Every batch of product undergoes rigorous testing for purity, specific rotation, moisture, heavy metals, microbiology and physical-chemical properties; a detailed English COA is provided with each shipment, including solubility, purity and specific rotation test data.